DOCUMENT RESUME

ED 316 836 CS 009 963

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TITLE	The Chapter 1 Developer/Demonstration Program, Learning To Read through the Arts, 1988-89. Evaluation Section Report.
INSTITUTION	New York City Board of Education, Brooklyn, NY. Office of Research, Evaluation, and Assessment.
PUB DATE	Feb 90
NOTE	42p.
PUB TYPE	Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Childrens Art; Demonstration Programs; Elementary Education; Limited English Speaking; Program Evaluation; Reading Ability; Reading Achievement; Reading Attitudes; Reading Difficulties; *Reading Improvement; *Reading Instruction; *Reading Programs; Reading Research; *Reading Skills; Recreational Reading; Remedial Reading; Visual Arts
IDENTIFIERS	*Education Consolidation Improvement Act Chapter 1; *Learning to Read through the Arts Program; New York City Board of Education

ABSTRACT

The Chapter 1 Developer/Demonstration Program, Learning to Read Through the Arts (LTRTA), offers intensive reading and reading-oriented arts instruction to Chapter 1-eligible students. During the 1988-89 school year, the program served 100 ungraded special education students and 716 general education and limited English proficient (LEP) students in grades 2 through 6. LTRTA reading and artist teachers and participating classroom teachers work as a team to improve students' reading and writing skills and to increase their interest in the arts. Evaluation of the program was based on data from interviews of program staff, observation of program sites and classes, and analyses of standardized and criterion-referenced reading tests and holistically scored writing tests. Results indicated that (1) the program was implemented as proposed and was well organized and effective; (2) general education students in all grades except two made statistically significant mean gains on standardized reading tests; (3) 81% of the special education students mastered 3 or more additional reading skills, and 82% of the LEP students mastered 5 or more additional skills; (4) all students achieved statistically significant gains from pretest to posttest writing evaluations; and (5) the mean gain in reading achievement for 1988-89 was more than twice as high as the mean gains for the previous two school years. Recommendations include monitoring the transportation problem and investigating the high turnover rate of artist teachers. (Nine tables of data are included.) (RS)

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OREA Report

EVALUATION SECTION REPORT

THE CHAPTER 1 DEVELOPER/DEMONSTRATION PROGRAM LEARNING TO READ THROUGH THE ARTS 1988-89

EVALUATION SECTION REPORT

John Schoener, Chief Administrator

February 1990

EVALUATION SECTION REPORT

THE CHAPTER 1 DEVELOPER/DEMONSTRATION PROGRAM LEARNING TO READ THROUGH THE ARTS 1988-89

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CS009963

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CHAPTER 1 DEVELOPER/DEMONSTRATOR PROGRAM: LEARNING TO READ THROUGH THE ARTS, 1988-89 EVALUATION SUMMARY

BACKGROUND

The Chapter 1 Developer/Demonstration Program, Learning to Read Through the Arts (L.T.R.T.A.), offers intensive reading and reading-oriented arts instruction to Chapter 1-eligible students. During the 1988-89 school year, the program served 100 ungraded special education students and 716 students in grades two through six; 83 students were Limited English Proficient students, and 633 were in general education classes. In 1988-89, the program was funded through Chapter 1 of the Education Consolidation and Improvement Act (E.C.I.A.) at $997,000.

L.T.R.T.A. reading and artist teachers and participating classroom teachers work as a team to improve students' reading and writing skills and to increase their interest in the arts. Reading teachers provide an individualized, diagnostic, prescriptive approach to reading. Artist teachers stress listening, speaking, reading, and writing in the arts-oriented workshops. As students see, hear, touch, smell, and/or taste their artistic creations, they perceive the artistic process and the product and recall what they have learned. The experience of learning to read through the arts helps build their self-confidence and improve their self-image.

Program activities were based at four sites, one each in Manhattan, the Bronx, Brooklyn, and Queens. At each program site, there were two reading teachers. At the Manhattan site, there were three artist teachers, and at the Bronx, Queens and Brooklyn sites, there were two artist teachers and one office aide. The program director, two staff developers, and one office aide worked out of the program office, housed at P.S. 9 in Manhattan.

PROGRAM OBJECTIVES

The objectives for the 1988-89 L.T.R.T.A. program were:

- General education students were expected to make statistically significant mean gains on standardized reading tests.
- Sixty percent of the LEP students were expected to master at least five additional reading skills on the posttest of the Wisconsin Design Skills Development Test that they had not mastered on the pretest.
- Sixty percent of the special education students were expected to master at least three additional reading skills on the posttest of the Wisconsin Design Skills Development Test that they had not mastered on the pretest.

- All students were expected to achieve statistically significant mean gains from pretest to posttest on holistically scored writing samples.

PROGRAM EVALUATION

The findings of this evaluation are based on data from interviews of program staff, observations of program sites and classes, and analyses of standardized and criterion-referenced reading tests and holistically scored writing tests. The impact of the program on student achievement in reading and writing was determined by evaluating students' performance on reading and writing tests against the program objectives.

FINDINGS

Site Observations and Interviews

The review of program documents, observation of program activities, and interviews of program staff indicated that the program was implemented as proposed. The program was well organized and effective. Program staff were professional and collegial. Students were engaged and enthusiastic. However, staff interviews revealed two problems.

Transportation by bus was an occasional problem at some sites. Since all students must travel from their home school to the program sites and on field trips to cultural institutions in New York City, adequate transportation arrangements are important to the program's success.

In general, artist teachers are not annualized--that is, not on the official Board of Education payroll as teachers. This is a source of anxiety to artist teachers. Program teachers believe it leads to a higher turnover rate among artist teachers than among reading teachers who are annualized and thus to less program stability and continuity, both of which are essential to the team teaching concept practiced in the program.

Reading Tests of General Education Students

General education students in all grades except grade two made statistically significant mean gains on standardized reading tests and thus met the program objectives. For students in fifth and sixth grade, these gains represented large effect sizes and thus educationally meaningful gains. The small decrease for grade two was neither statistically significant nor educationally meaningful. Since there were only 20 second grade students with complete test information, this finding should not be interpreted as a valid assessment of the program impact on this grade.

Reading Tests of LEP and Special Education Students

Eighty-one percent of special education students mastered three or more additional reading skills, and 82 percent of LEP students mastered five or more additional reading skills. Thus, the program surpassed its objectives. In addition, the breakdown of LEP student reading achievement by grade showed that the program surpassed its objective for each grade.

Writing Tests

Special education students and LEP and general education students in all grades achieved statistically significant mean gains from pretest to posttest and thus met the program objectives. The mean gains represented educationally meaningful gains.

Comparison with Past Years

Since the 1986-87 school year, the reading achievement of general education students has been measured with the Degrees of Reading Power test. For four years in a row, overall mean gains have been statistically significant. The mean gain of 9.9 N.C.E.s in 1988-89 is more than twice as high as the mean gains for the previous two school years.

RECOMMENDATIONS

Based on the evaluation findings and other information presented in the report, the following recommendations are made:

- The program should continue its innovative curriculum of integrating reading and the arts and, as several teachers requested in the interviews, should expand, if possible, to serve an even larger population of students.

- Given its importance to the program, transportation should be closely monitored by program staff so that any decline in service can be quickly identified and corrected.

- The evaluation of the 1989-90 program should investigate whether or not the perceived higher turnover rate of artist teachers is a fact. If the turnover rate is substantially higher than that of annualized teachers, this could contribute to a lack of program stability and continuity. OREA, program staff, other Board of Education staff, and/or interested parties might then develop a proposal to change the status of artist teachers in a feasible manner.

ACKNOWLEDGEMENTS

The production of this document is the result of a collaborative effort of full-time staff and consultants. In addition to those whose names appear on the cover, Ilan Talmud analyzed student attendance and achievement data, and Stan Davis helped write the report, typed the manuscript, and edited the final draft.

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I. INTRODUCTION

PROGRAM PURPOSE

The Chapter 1 Developer/Demonstration Program, Learning to Read Through the Arts (L.T.R.T.A.), offers intensive reading and reading-oriented arts instruction to Chapter 1-eligible students. As students see, hear, touch, smell, and/or taste their artistic creations, they perceive the artistic process and the product, and they recall what they have learned. The experience of learning to read through the arts helps build their self-confidence and improve their self-image.

STUDENT ELIGIBILITY

Students are eligible for Chapter 1 services if they live in a targeted attendance area and score below a designated cut-off point on State-mandated standardized reading tests. The Chapter 1 Evaluation Reporting System specifies, however, that eligible students may also be selected for Chapter 1 programs on the basis of classroom performance. Generally, most children classified as limited English proficient (LEP) and many special education students are excluded from the standardized testing program and were selected for program participation on the basis of teacher ratings or classroom performances.

STUDENTS SERVED

During the 1988-89 school year, the program served 100 ungraded special education students and 716 students in grades two through six; 83 students were LEP students, and 633 were in general education classes.

- More than three-quarters of the students (78 percent) were in the general education curriculum.
- The vast majority of students (81 percent) were in grades three, four, and five (see Table 1).

PROGRAM OBJECTIVES

The objectives for the 1988-89 L.T.R.T.A. program were:

- General education students were expected to make statistically significant mean gains on standardized reading tests.
- Sixty percent of the LEP students were expected to master at least five additional reading skills on the posttest of the Wisconsin Design Skills Development Test that they had not mastered on the pretest.
- Sixty percent of the special education students were expected to master at least three additional reading skills on the posttest of the Wisconsin Design Skills Development Test that they had not mastered on the pretest.
- All students were expected to show statistically significant mean gains from pretest to posttest on holistically scored writing samples.

PROGRAM EVALUATION

The purpose of the 1988-89 evaluation by the Office of Research, Evaluation, and Assessment/Instructional Support Evaluation Unit (OREA/I.S.E.U.) was to describe the program and to assess its impact on student achievement in reading and writing. The following methods were used:

- review of program documents and interviews of program staff to describe the program organization and funding, the curriculum, and staff development activities;
- analyses of data retrieval forms that report information about grade placement and students' attendance;
- observations of teacher/student interaction during instruction; and

TABLE 1

Number and Percentage of Students by Grade Participating in the Learning to Read Through the Arts Program, 1988-89

Grade	Number of Students	Percentage of Students
2	29	3.6
3	139	17.0
4	296	36.3
5	225	27.3
6	27	3.3
Ungraded[a]	100	12.2
Total	816	100.0

[a] Special education students are not placed by grade.

- More than one-third of all students were in the fourth grade.
- The vast majority of the students, 81 percent, were in grades three, four, and five.
- Special education students constituted approximately one-eighth of the student population.

- analyses of students' scores on standardized and criterion-referenced reading tests and holistically scored writing tests.

SCOPE OF THE REPORT

The purpose of this report is to assess the implementation and effectiveness of the 1988-89 Chapter 1 Learning to Read Through the Arts Program. Program organization and implementation are described in Chapter II. Student attendance and academic achievement are discussed in Chapter III. Conclusions and recommendations are offered in Chapter IV.

II. PROGRAM ORGANIZATION AND IMPLEMENTATION

PROGRAM BACKGROUND AND FUNDING

The Learning to Read Through the Arts Program (L.T.R.T.A.) operates under the auspices of the Office of Professional Development and Leadership Training under the Deputy Chancellor for Instruction and Development of the New York City Board of Education. The program has been in operation since 1971 and has received recognition as an exemplary program at the national, state, and local levels. In 1988-89, the program was funded through Chapter 1 of the Education Consolidation and Improvement Act (E.C.I.A.) at $997,000.

PROGRAM ORGANIZATION

The program was offered for a 32-week cycle from October 1988 to June 1989. Program activities were based at four sites--one each in Manhattan, the Bronx, Brooklyn, and Queens. In addition, field trips and workshops were conducted in association with the Staten Island Children's Museum, the Metropolitan Museum of Art, the Whitney Museum, the Guggenheim Museum, the Brooklyn Academy of Music, the National Society of Colonial Dames, the International Center of Photography, and the Staten Island Advance.

At each program site, there were two reading teachers. At the Manhattan site, there were three artist teachers, and at the Bronx, Queens, and Brooklyn sites, there were two artist teachers and one office aide. At each site, one of the teachers acted as site coordinator. The program director, two staff developers,

and one office aide worked out of the program office, housed at P.S. 9 in Manhattan.

Reading teachers are licensed, and several of them have many years with the program. All reading teachers are annualized--that is, on official Board of Education payrolls as regular teachers. Artist teachers are also licensed, but they are less experienced. However, with the exception of one teacher, they are not annualized.

L.T.R.T.A. reading and artist teachers and participating classroom teachers work as a team to improve students' reading and writing skills and to increase their interest in the arts. Reading teachers provide an individualized, diagnostic, prescriptive approach to reading. Artist teachers stress listening, speaking, reading, and writing in the arts-oriented workshops. Classroom teachers were expected to teach skills associated with the program one period each day at the students home school.

When children visit the site, they are usually divided into two groups. One group receives an art lesson while the other group receives a reading lesson. The children switch classes at the end of the lesson. This arrangement encourages the team-teaching concept, where a reading teacher and an artist teacher focus on the same or a similar theme and coordinate their lesson plans.

Most general education and LEP students were bused to the program site in their borough two afternoons a week for one four-

hour session. For the school year, they attended a total of 48 sessions. In contrast, students from one school and special education students attended sessions one full day each week, for a total of 29 sessions.

PROGRAM IMPLEMENTATION

Site Observations

An OREA/I.S.E.U. evaluator visited each site in March and May. During each visit, four classes were observed. Interviews were conducted with reading teachers, artist teachers, and feeder school classroom teachers who had accompanied their students to the sites on the day of the visit.

The program buildings were clean and well maintained. Classrooms were well-illuminated, adequately heated and ventilated, and equipped with shelves, storage lockers, and moveable furniture. They were decorated with vocabulary lists, art terms, synonym-antonym charts, student tests and compositions, and teacher-made materials. Student art work was displayed in classrooms and throughout the school. It included self-portraits, paintings, murals, printing blocks, blueprints, tinfoil models, Japanese "fish kites," pottery, and painted screens.

Curriculum

All students attended reading and reading-oriented arts workshops. Special education and LEP students were taught the same curriculum as general education students, but at a slower pace.

As part of each reading workshop, teachers used creative visual materials that related to the site's general arts theme. Individual and small-group reading workshops focused on comprehension, reasoning, problem-solving, the appreciation of literature, and reading for information and pleasure. Language skills instruction included word-identification skills, specialized vocabulary used on norm-referenced tests, and writing.

The reading-oriented art curriculum is based on a few themes each year. This year's themes included units on newspapers/ journalism and buildings in New York City. In the reading-oriented arts workshops, students' artistic experience included painting, print making, photography, sculpture, mixed media, theater, dance, and music.

Reading and art are integrated as the workshop teacher leads a discussion of the project, the artistic process, or the students' creative experience. The teacher summarizes the discussion in a composition written in a master journal. As she writes, she describes important aspects of reading and writing--sounds and symbols, capitalization, punctuation, phrasing, and vocabulary. Students record the composition in their personal journals and then record their own experiences.

In both reading and reading-oriented art workshops, the staff moved quickly into the lessons, clearly explained the main concepts, and related tasks to the objectives of the lesson. Classroom teachers assisted reading teachers, instructed students in word-recognition skills, and participated in the art

workshops. Students were engaged in their tasks and worked independently and efficiently.

STAFF DEVELOPMENT

The major objectives of staff development were to share educational information and to learn to implement the program successfully. The project director, staff developers, and site coordinators provided training for staff teachers and classroom teachers.

In the fall, before the start of the program, staff members and classroom teachers attended pre-service training sessions. In addition, artist teachers, reading teachers, and classroom teachers attended in-service training sessions during the school year. Staff development topics included the interpretation of standardized testing and diagnostic inventories, the developmental breakdowns of reading, language, and writing skills, and strategies for developing thinking skills.

Staff participated in seven staff development sessions each month. Once a week, the site coordinator at each site conducted a staff development session. Once a month, a staff developer visited each site, the program director conducted a workshop at each site, and the staff from each site attended a staff development meeting at the program office in Manhattan.

STAFF PERCEPTIONS OF THE PROGRAM

Teachers were asked for the two most positive aspects of the program. The most frequent responses were that the integration of reading and art helped children to read better, the program

helped students become more motivated to learn, and it improved their attitudes towards learning.

In general, teachers felt the program was well organized and operated smoothly. They praised the cooperative attitude of the administrative staff, team leaders, and feeder school personnel. In addition, they singled out the excellent rapport among children and between children and program teachers. Finally, teachers thought highly of staff development training and were satisfied with the quality and types of program materials.

Teachers believed in the program philosophy. They felt that the organization necessary to complete an art work instilled discipline in students, the careful planning required in the production of art developed students' ability to identify cause and effect relationships and the sequencing of items, the attention to detail and clarity of thought demanded in art were helpful in writing compositions, and the expansion of students' scope of interests widened children's language experience base. Teachers also thought that art itself was beneficial for children because children's self-confidence increases as they create something in the art workshop and because art is an outlet for creative children and helps many children open up to their peers.

Finally, teachers noted two problems with the program. First, there were occasional problems with the timely arrivals of buses. More importantly, however, they felt that the professional status of artist teachers was a problem. Because artist teachers are not annualized, they leave the program when

economic demands increase or the need for fringe benefits become paramount. Teachers expressed the conviction that regularizing the art positions would improve the program by increasing its stability and continuity.

III. STUDENT OUTCOMES

ATTENDANCE

The maximum number of days of attendance in the Learning to Read Through the Arts Program was 48 or 29 days, depending on the type of student involved. Most general education and LEP students could attend workshops two afternoons a week for a maximum of 48 four-hour sessions. General education and LEP students from one school and special education students could attend workshops one full day each week for a maximum of 29 sessions. Overall, program students attended 83 percent of the sessions. The mean number of days absent was 7.1 days.

METHODS USED TO EVALUATE STUDENT ACHIEVEMENT

The impact of the program on student achievement in reading and writing was determined by evaluating students' performance on standardized and norm-referenced reading tests and holistically scored writing tests against the program objectives. The program objective for general education students on standardized reading tests--the Metropolitan Achievement Test (MAT) and the Degrees of Reading Power Test (D.R.P.)--was that they would achieve a statistically significant mean gain from pretest to posttest. On the Wisconsin Design Skills Development Test, LEP students were expected to master five additional reading skills and special education students were expected to master three additional reading skills on the posttest that they had not mastered on the pretest. On the holistically scored writing tests, students were

to achieve statistically significant mean gains from pretest to posttest.

Reading Tests of General Education Students

On the standardized reading tests, students' raw scores were organized by grade and converted to normal curve equivalents (N.C.E.s).* Students in grade three took the MAT in spring 1988 and the D.R.P. test in spring 1989. Scores on the D.R.P. (posttest) were converted to (pretest) MAT scores so that achievement could be measured.** However, since the MAT emphasizes basic skills and the D.R.P. emphasizes reading comprehension, the comparison may not be a good measure of student achievement.

Statistical analyses were carried out on the converted N.C.E. scores. Correlated *t*-tests were used to determine whether mean gains were statistically significant. Statistical significance indicates whether the changes in achievement are real or occur by chance. However, achieving statistically significant mean gains does not address the issue of whether the mean gains are important to the students' educational

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*Normal curve equivalent scores are similar to percentile ranks but, unlike percentile ranks, are based on an equal-interval scale ranging from 1 to 99, with a mean of 50 and a standard deviation of approximately of 21. Because N.C.E. scores are equally spaced, mathematical and statistical calculations such as averages are meaningful; in addition, comparisons of N.C.E. scores may be made across different achievement tests.

** The equi-percentile method was used. The frequency distributions of scores on the tests were employed to generate conversion tables, which were approved by the State Education Department.

development. For example, the importance of achieving statistically significant mean gains can be exaggerated for large groups of students because even small mean gains by large groups of students will generally be statistically significant. Similarly, the importance of not achieving statistically significant mean gains can be overstated for small groups of students because it is more difficult for small groups to achieve mean gains that are statistically significant. Thus, an effect size (E.S.)* is reported for each mean difference to indicate whether each mean gain or loss was educationally meaningful.

Reading Tests of LEP and Special Education Students

On the Wisconsin Design Skills Development Test, tallies were made of the number of reading skills mastered by each student on the pretest and posttest, and the number of additional skills mastered by each student on the posttest was calculated. Frequency distributions were performed to identify the number of special education students and the number of LEP students by grade and overall who mastered a specific, additional number of skills.

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*The effect size, developed by Jacob Cohen, is the ratio of the mean gain to the standard deviation of the gain. This ratio provides an index of improvement irrespective of the size of the sample. According to Cohen, .2 is a small effect size, .5 is a moderate effect size, and .8 is a large effect size. Only effect sizes of .8 and above are considered educationally meaningful.

Writing Tests

Writing tests were organized by grade and holistically scored using a five point scale that measures how well a student communicates. Test readers from the program staff were asked to pay special attention to the coherence of the passage, its sentence structure and sequence, and the writer's awareness of the audience. Each writing test was independently scored by two readers. A one point discrepancy between readers was acceptable. However, discrepancies of more than one point required a third reader. The program reported that 98 percent of the cases did not need a third reader.

After the tests had been scored, correlated t-tests were used to determine statistical significance. Then, an effect size was calculated for each mean difference to indicate whether each mean gain or loss was educationally meaningful.

ACADEMIC ACHIEVEMENT IN READING

General Education Students

Table 2 presents data on second and third grade general education students' achievement on standardized reading tests. Second grade students were pretested in spring 1988 and posttested in spring 1989 on the MAT. In contrast, third grade students were pretested in spring 1988 on the MAT and posttested in spring 1989 on the D.R.P. D.R.P. scores were converted for comparison with MAT scores. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 2 shows that:

TABLE 2

Mean N.C.E. Differences of General Education Students by Grade in the Learning to Read Through the Arts Program on the Metropolitan Achievement Test, 1988-89

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	Effect Size
2	20	35.1	13.2	34.3	11.3	-0.8	14.3	0.1
3[a]	69	32.3	13.0	36.7	16.9	4.4[b]	17.5	0.3

[a] Third grade students were pretested on the MAT in spring 1988 and posttested on the Degrees of Reading Power Test (D.R.P.) in spring 1989. The new (1987-88) D.R.P. norms were used on spring 1989 test scores. Then, D.R.P. scores were converted for comparison with MAT scores.

[b] The mean difference was statistically significant at the $p \leq .05$ level.

- Third grade students achieved a statistically significant mean gain of 4.4 N.C.E.s. This mean gain represented a small effect size.
- Mean N.C.E. scores for second grade students decreased from pretest to posttest, from 35.1 N.C.E.s to 34.3 N.C.E.s. However, the decrease of 0.8 N.C.E.s was not statistically significant.

- Third grade students achieved a statistically significant mean gain of 4.4 N.C.E.s. This mean gain represented a small effect size.

- Mean N.C.E. scores for second grade students decreased from pretest to posttest, from 35.1 N.C.E.s to 34.3 N.C.E.s. However, the decrease of 0.8 N.C.E.s was not statistically significant.

Table 3 presents data on student achievement by general education students in fourth, fifth, and sixth grade on the D.R.P. Students were pretested in spring 1988 and posttested in spring 1989. The new (1987-88) D.R.P. norms were used on the spring 1988 and spring 1989 test scores. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 3 shows that:

- The overall mean gain of 9.9 N.C.E.s was statistically significant. The overall effect size represented an educationally meaningful mean gain.

- Students in grades four, five, and six achieved statistically significant mean gains. Effect sizes for students in fifth and sixth grade represented educationally meaningful gains.

Limited English Proficient Students

Table 4 presents data on student achievement in reading by LEP students in third, fourth, and fifth grade on the criterion-referenced Wisconsin Design Skills Development Test. Students were pretested in fall 1988 and posttested in spring 1989. Student achievement was measured against the program objective that 60 percent of LEP students would master at least five additional reading skills on the posttest that they had not mastered on the pretest. Table 4 shows that:

TABLE 3

Mean N.C.E. Differences of General Education Students by Grade in the Learning to Read Through the Arts Program on the Degrees of Reading Power Test, 1988-89[a]

		Pretest		Posttest		Difference[b]		Effect
Grade	N	Mean	S.D.	Mean	S.D.	Mean	S.D.	Size
4	192	29.7	13.1	35.7	15.3	6.0	13.4	0.4
5	175	23.5	13.4	37.4	13.4	13.9	11.3	1.2
6	22	24.9	10.4	37.5	11.6	12.6	11.1	1.1
Total	389	26.6	13.4	36.5	14.3	9.9	12.9	0.8

[a] The new (1987-88) D.R.P. norms were used on the spring 1988 and spring 1989 test scores.

[b] Mean differences were statistically significant at the $p \leq .05$ level.

- The overall mean gain of 9.9 N.C.E.s was statistically significant. The overall effect size represented an educationally meaningful mean gain.
- Students in grades four, five, and six achieved statistically significant mean gains. Effect sizes for students in fifth and sixth grade represented educationally meaningful gains.

TABLE 4

Number and Percentage of Limited English Proficient Students by Grade in the Learning to Read Through the Arts Program Mastering Five or More Additional Skills on the Wisconsin Design Skills Development Test, 1988-89[a]

Grade	Number of Students	Additional Reading Skills Mastered: Less than Five N	Less than Five %	More than Five N	More than Five %
3	39	7	18	32	82
4	36	8	22	28	78
5	7	0	0	7	100
Total	82	15	18	67	82

[a] The program objective was that 60 percent of LEP students would master at least five additional reading skills on the posttest that they had not mastered on the pretest.

- More than 60 percent of LEP students in each grade and 82 percent of all LEP students mastered five or more additional reading skills on the posttest.
- All seven fifth grade LEP students mastered five or more additional reading skills on the posttest.

- More than 60 percent of LEP students in each grade and 82 percent of all LEP students mastered five or more additional reading skills on the posttest.

Special Education Students

Table 5 presents data on student achievement in reading by special education students on the criterion-referenced Wisconsin Design Skills Development Test. Students were pretested in fall 1988 and posttested in spring 1989. Student achievement was measured against the program objective that 60 percent of the special education students would master at least three additional reading skills on the posttest that they had not mastered on the pretest. Table 5 shows that:

- Eighty-one percent of special education students mastered three or more additional reading skills on the posttest.

Comparison of Reading Achievement Over Four School Years

Table 6 presents data on student achievement by general education students on the D.R.P. over the last four school years, 1986-87 through 1988-89. Students were pretested in the spring of the previous year and posttested in the spring of the current academic year. For example, in the 1988-89 school year, students were pretested in spring 1988 and posttested in spring 1989. The new (1987-88) D.R.P. norms were used on the pretest (spring 1988) and posttest (spring 1989) test scores. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 6 shows that:

- Mean N.C.E. gains each year were statistically significant.

TABLE 5

Number and Percentage of Special Education Students in the Learning to Read Through the Arts Program Mastering Three or More Additional Reading Skills on the Wisconsin Design Skills Development Test, 1988-89[a]

Number of Additional Skills Mastered	Number of Students	Percentage of Students
Less than three	19	19
Three or more	81	81
Total	100	100%

[a] The program objective goal was that 60 percent of special education students would master at least three additional reading skills on the posttest that they had not mastered on the pretest.

- Eighty-one percent of special education students mastered three of more additional reading skills on the posttest.

TABLE 6

Mean N.C.E. Differences of General Education Students in the Learning to Read Through the Arts Program on the Degrees of Reading Power Test, 1986-87 through 1988-89

Year	Grade	Number of Students	Mean N.C.E. Differences[a]
1986-87	4-5	343	13.1
1987-88	4-5	303	4.2
1987-88	4-6	347	3.9
1988-89[b]	4-6	389	9.9

[a] Mean gains were statistically significant at the $p \leq .05$ level.

[b] The new (1987-88) D.R.P. norms were used on the pretest (spring 1988) and posttest (spring 1989) test scores.

- Mean N.C.E. gains each year were statistically significant.
- The mean gain of 9.9 N.C.E.s in 1988-89 is substantially larger than gains in the previous two school years.

- The mean gain of 9.9 N.C.E.s in 1988-89 is substantially larger than gains in the previous two school years.

ACADEMIC ACHIEVEMENT IN WRITING

General Education Students

Table 7 presents data on student achievement by general education students in grades two through six on holistically scored writing tests. Students were pretested in fall 1988 and posttested in spring 1989. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 7 shows that:

- The overall mean gain of 1.8 raw-score points was statistically significant. The overall effect size represented an educationally meaningful gain.
- Students in all grades achieved statistically significant mean gains. Effect sizes for students in all grades represented educationally meaningful gains.

Limited English Proficient Students

Table 8 presents data on student achievement by LEP students in grades three through five on holistically scored writing tests. Students were pretested in fall 1988 and posttested in spring 1989. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 8 shows that:

- The overall mean gain of 2.0 raw-score points was statistically significant. The overall effect size represented an educationally meaningful mean gain.
- Students in all grades achieved statistically significant mean gains. Effect sizes for students in all grades represented educationally meaningful gains.

TABLE 7

Mean Raw-Score Differences Of General Education Students by Grade in the Learning to Read Through the Arts Program on Holistically Scored Writing Tests, 1988-89

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference* Mean	Difference* S.D.	Effect Size
2	18	1.1	1.0	4.0	1.3	2.9	1.3	2.2
3	90	1.7	0.9	3.6	1.2	1.9	1.3	1.5
4	215	2.1	1.0	4.0	1.1	1.9	1.1	1.7
5	187	2.7	1.0	4.3	1.2	1.6	1.1	1.5
6	22	3.9	0.6	5.1	0.8	1.2	0.9	1.3
Total	532	2.3	1.0	4.1	1.2	1.8	1.2	1.5

* Mean differences were statistically significant at the $p \leq .05$ level.

- The overall mean gain of 1.8 raw-score points was statistically significant. The overall effect size represented an educationally meaningful gain.
- Students in all grades achieved statistically significant mean gains. Effect sizes for students in all grades represented educationally meaningful gains.

TABLE 8

Mean Raw Score Differences of Limited English Proficient Students by Grade in the Learning to Read Through the Arts Program on Holistically Scored Writing Tests, 1988-89

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference* Mean	Difference* S.D.	Effect Size
3	34	1.5	1.1	3.2	1.2	1.7	0.9	1.9
4	29	1.0	1.1	3.1	1.9	2.1	1.5	1.4
5	6	0.8	1.3	4.0	0.6	3.2	1.5	NA
Total	69	1.2	1.2	3.2	1.5	2.0	1.3	1.5

* Mean differences were statistically significant at the $p \leq .05$ level.

- The overall mean gain of 2.0 raw-score points was statistically significant. The overall effect size represented an educationally meaningful mean gain.
- Students in all grades achieved statistically significant mean gains. Effect sizes for students in all grades represented educationally meaningful gains.

Special Education Students

Table 9 presents data on student achievement by special education students on holistically scored writing tests. Students were pretested in fall 1988 and posttested in spring 1989. Mean differences were calculated and measured against the program objective, a statistically significant mean gain. Table 9 shows that:

- The statistically significant mean raw-score gain of 1.9 points met the program criterion for success. It represented an educationally meaningful gain.

TABLE 9

Mean Raw Score Differences of Special Education Students in the Learning to Read Through the Arts Program on Holistically Scored Writing Tests, 1988-89

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference[a] Mean	Difference[a] S.D.	Effect Size
Ungraded[b]	84	1.7	1.4	3.6	1.1	1.9	1.1	1.7

[a] The mean difference was statistically significant at the $p \leq .05$ level.

[b] Special education students are not placed by grade.

- The statistically significant mean raw-score gain of 1.9 points met the program criterion for success, a statistically significant mean gain. It represented an educationally meaningful gain.

IV. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The evaluation of student achievement on reading and writing tests shows that with one exception--the performance of second grade students in the general education curriculum on the Metropolitan Achievement Test (MAT)--all program objectives for student improvement in reading and writing were met or surpassed. However, it must be noted that a significant number of students did not take both the pretest and the posttest in reading and writing: namely, 660 students (81 percent) took both tests in reading and 689 students (84 percent) took both tests in writing.

General education students in all grades except grade two made statistically significant mean gains from pretest to posttest on standardized reading tests, meeting the program objective. For students in fifth and sixth grade, effect sizes represented educationally meaningful gains. Moreover, for students in third, fourth, fifth, and sixth grades, all mean pretest scores were below the State Education Department's 35 N.C.E. threshold for educationally disadvantaged students, while all mean posttest scores were above it. In conjunction with the achievement of statistically significant mean gains, this indicates the positive impact of the program on students' ability to read.

Second grade students in the general education curriculum did not meet the program objective in reading achievement. In fact, mean scores dropped from 35.1 N.C.E.s to 34.3 N.C.E.s from

pretest to posttest. However, this small decrease was neither statistically significant nor educationally meaningful. Moreover, only 20 of 29 second grade students in the general education curriculum (69 percent) took both pretests and posttests. The percentage was the lowest for any grade or population in the program. Therefore, the low number of students (15 is the minimum number of cases for which statistical significance should be validly tested), the low percentage, and the fact that the mean decrease was not statistically significant suggest that the impact of the program on the reading achievement of second grade students this year was not adequately measured by the standardized reading test.

On the Wisconsin Design Skills Development Test, 81 percent of special education students mastered three or more additional reading skills on the posttest that they had not mastered on the pretest, and 82 percent of LEP students mastered five or more additional reading skills. Thus, the program surpassed its objectives for reading achievement for special education and LEP students. In addition, the breakdown of LEP student reading achievement by grade showed that the program surpassed its objective for each grade.

On the holistically scored writing tests, special education students and LEP and general education students in all grades made statistically significant mean gains and thus met the program objectives. These gains represented large effect sizes and were educationally meaningful.

The review of program documents, observation of program activities, and interviews of program staff indicated that the program was implemented as proposed. The program was well organized and effective. Program staff were professional and collegial. Students were engaged and enthusiastic. However, there were some small problems. At some sites, there were occasional problems with the timely arrival of buses. In addition, staff interviews brought out the fact that the non-annualized status of artist teachers was a source of anxiety. This status was perceived by teachers to contribute to a high turnover among artist teachers and thus less stability and continuity in the program.

RECOMMENDATIONS

The program has been implemented as proposed, and students in general have met the program objectives for achievement in reading and writing.

- The program should continue its innovative curriculum of integrating reading and the arts and, as several teachers requested in the interviews, expand, if possible, to serve an even larger population of students.

Students travel from their home school to the program sites and on field trips to cultural institutions in New York City. Staff interviews indicated that transportation is an occasional problem at some sites. While transportation problems are a fact of life in New York City, the timely transportation of students is central to the implementation of the program.

- Given its importance to the program, transportation should be closely monitored by program staff so that

any decline in service can be quickly identified and corrected.

Staff interviews also revealed that, with the exception of one artist teacher, artist teachers are not annualized. This form of job insecurity is a source of anxiety to artist teachers. Program teachers believe it leads to a higher turnover rate among artist teachers than among reading teachers and thus to less program stability and continuity, both of which are essential to the team teaching concept practiced in the program.

- The evaluation of the 1989-90 program should investigate whether or not the perceived higher turnover rate of artist teachers is a fact. If the turnover rate is substantially higher, this would be evidence of a lack of program stability and continuity. OREA, program staff, other Board of Education staff, and/or interested parties might then develop a proposal to change the status of artist teachers in a feasible manner.